

CUCAMONGA BROME

A NEW GRASS FOR COVERCROPPING



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Cucamonga brome...

is an annual grass, recently developed and tested in southern California, and found to be excellent as a covercrop in vineyards. It also has some value as a covercrop for burned-over areas and along road banks. There is no apparent reason why it will not work well in northern California, too.

One seeding...

in the fall establishes the crop. It grows rapidly after the rains start, guards against wind and water erosion, matures very early in the spring and reseeds itself into a perpetual crop without further planting. It is practically disease-free.

As a forage crop...

it is of limited value because it matures too early.

This circular...

tells how and where to obtain seed of Cucamonga brome, and how to use it for best results as a covercrop.

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In 1939 . . .

a small amount of annual brome seed was collected from plants near Cucamonga, California. Because the plants looked promising for covercrop material, the seed was tested over a period of 8 years.

The grass, which was given the name Cucamonga brome, was found to have these qualities:

1. When planted in the fall, it starts to grow as soon as the fall rains come, and continues to grow in cold, windy, winter weather.
2. During this period of growth, it provides excellent protection against both wind and water erosion of the soil.
3. It matures about 20 to 30 days earlier than conventional covercrop grasses and therefore may be cultivated before it has a chance to use up moisture needed by other plants (e.g., grape vines) in the field.
4. When cultivated, and left as a mulch on the soil, Cucamonga brome reseeds itself. The seed lies dormant during the summer, but starts to grow again the following fall, and gives wind erosion protection year after year from one planting.
5. It is of limited value as forage because of its early maturity, but during its short life, is palatable and has no bad features such as sharp-pointed seeds or long awns. It never attains a height of more than about 24 inches.

The efficiency of Cucamonga brome has been proved in southern California. Its adaptability to northern California is still being studied, but since the species from which it was obtained grows over a wide range, no difficulty may be expected from northern California conditions.

Top: A first-year stand of Cucamonga brome that was drilled in a vineyard. Bottom: The second-year stand in the same vineyard, after the grass had reseeded itself over the entire area of the vineyard.



The original planting should be made carefully for best results

Cucamonga brome should be planted in the fall, before the rains start. Drilling is best, but broadcasting may be used if necessary.

A mulch will help to improve the stand as the first seed planting is susceptible to being destroyed by wind erosion before it gets started. If there is no mulch on the soil, it is well to provide one. If the planting is being made in a vineyard, prunings or grape pulp may serve as a protecting mulch. Otherwise weeds or manure or a combination of these materials will do for a mulch.

In a new vineyard, sudangrass may be planted between the rows in the spring to provide a summer covercrop and to act as a protection for Cucamonga brome planting in the fall.

For drilling, mix seed with rice hulls to give a more even distribution. Add half as much rice hulls by weight as there are pounds of seed—or 4 parts of rice hulls to 5 parts of seed, by volume. Rice hulls are very inexpensive to buy, and can be purchased from almost any feed dealer.

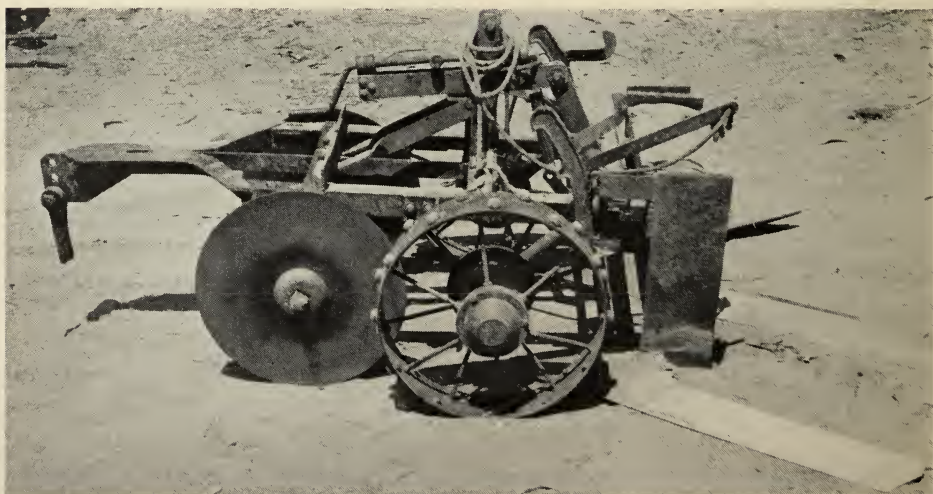
Rate of seeding should be approximately 20 pounds of seed per acre when drilled. This reduces to about 10 pounds of seed per acre if it is drilled in between the rows of a vineyard, because only approximately half of the area is seeded.

To get the correct seeding rate when the seed is mixed with rice hulls, open the drill to seed about 30 pounds of the mixture per acre. Since $\frac{2}{3}$ of the mixture is seed, this will give 20 pounds of seed per acre. Most drills will deliver the correct amount of brome and rice hull mixture when set to plant 130 to 150 pounds of barley per acre.

Depth of planting. In drilling, the seed should be covered about $1\frac{1}{2}$ inches.

Broadcasting the seed is, as stated, less efficient than drilling, and of course no rice hulls are needed for mixing with the seed. However, if it is desired to seed all of the soil in a vineyard, instead of just one way between the rows, broadcasting is necessary.

The rate of seeding, when broadcasting, should be raised to about 30 pounds per acre to take care of the possibility of poorer germination expected from this type of seeding.



This is the type of cultivation equipment recommended for working Cucamonga brome. The blades shear off the grass below the soil surface, but leave the plants on top to protect against erosion and reseed themselves. Deep tillage does not work as well.



This shows the desired effect of shallow tillage on Cucamonga brome. Most of the covercrop material has been left on top of the soil where it gives protection against erosion and is able to reseed itself.

In a bearing vineyard, it is well to broadcast the seed before the grapes are picked. The seed will then be trampled into the soil during the picking operation.

For road banks and burned-over areas, broadcasting is probably the only method that can be used. If possible, road banks should be harrowed previous to seeding—better stands will result—but in burned-over areas, the seed may be broadcast directly into the ash. A heavy rate of seeding will improve such stands.

Nitrogen is the most efficient fertilizer

Nitrogen is the most important fertilizing element needed for a good stand of Cucamonga brome that will protect the soil against erosion. The recommended rate for applying nitrogen is about 40 pounds per acre (equal to 200 pounds of

ammonium sulphate per acre). The fertilizer should be applied every year in the fall, before the rains start. The fertilizer may be broadcast or drilled.

When Cucamonga brome is used as cover in a vineyard, the nitrogen that is applied as fertilizer becomes available to the grape vines when the covercrop has decomposed.

Cultivate in early spring for the best results

To insure the best seed germination for the following year's crop, Cucamonga brome should be worked down in the early spring, after some of the seeds are filled. If planted in a vineyard, cultivation should be done before the grapes start to leaf out.

Examine the plants to see that the seeds are matured before cultivating.

Work the covercrop so that a mulch is left on the surface of the soil, as shown in the photo on page 5.

While disking is the most popular way of working in covercrops, it is probably not as good as some others for Cucamonga brome because it tends to bury too much of the grass and leave none on top for a mulch. Disking will work, however, but must be done later than if subsurface tillage is practiced. In any case, leave enough mulch on top for protection.

For best results, it is recommended that one of the newer type machines that give subsurface tillage be used—either the sweep, blade, or rod type weeder designed for covercrop tillage. These will leave enough mulch on top of the soil so that the grass will tend to reseed itself better, and give a heavier crop the following year. When this type of equipment is used, cultivation may be practiced earlier, because the plants are left on top of the soil and will mature seed, even after the roots have been cut.

Head smut disease is easily controlled by seed treatment

The only disease that has attacked Cucamonga brome so far is head smut, but this has been found to be easily controlled by seed treatment, according to Dr. George W. Fisher, Plant Pathologist at Washington State College.

For treatment, apply either Arasan dust or Tersan dust, at the rate of 3 to 4 ounces per bushel of seed, 3 to 4 days be-

fore planting. If more convenient, 2 ounces of 2 per cent Ceresan or 1/2 ounce of New Improved Ceresan per bushel may be used.

In any case, the directions on the container should be followed carefully, and special care should be exercised in using Ceresan to avoid seed injury.

Yield compares favorably with that of other grasses

To determine the amount of cover provided by Cucamonga brome, yields were measured against those of comparable stands of domestic ryegrass, *Lolium multiflorum* Lam. and soft brome, *Bromus mollis* L., and the results are shown in the table below.

Taking the averages of the figures shown in the table, Cucamonga brome produced almost 1 1/2 tons of mulch per acre per year; soft brome (one of the best annual range grasses in California) produced a little over 1 ton per acre per year. While ryegrass produced more mulch the first year than either of the others, it does not reseed itself, and only a small amount of weed growth was produced in the second and third years to provide erosion control.

Cucamonga brome is not recommended for forage

While Cucamonga brome is a good, palatable grass when it is young and green, and it has no bad features such as sharp-pointed seeds or long awns, its early maturity greatly detracts from its

Amount of Mulch Produced by 3 Annual Grasses at San Fernando, California,
Seeded Dec. 6, 1946

Variety	Air dry yield per acre—pounds			
	First year	Second year	Third year	Total
Cucamonga brome	2,870	1,480	4,220	8,570
Soft brome	2,320	1,690	3,130	7,140
Domestic ryegrass	3,670	0	0	3,670
				Normal
Rainfall in inches	16.38	7.49	8.23	16.53



This is the seed of Cucamonga brome. On the left is the pure, cleaned seed, and on the right is a mixture of seed and rice hulls. The rice hulls are added to make for easier drilling (see page 4).

forage value. Other grasses will provide as much feed, and will remain green for a longer period.

However, if Cucamonga brome is pastured, it will be palatable and nutritious up to the time the seeds begin to mature.

Seed, what it is like and where it may be obtained

Seed of Cucamonga brome is about $\frac{5}{16}$ to $\frac{1}{2}$ inch long, averages about 136,500 seeds to the pound—there are about 25 pounds in a bushel. The short awn found on the seed in the field is removed when the seed is cleaned, making it easier to run through the planter.

Good Cucamonga brome seed should have a purity of over 97 per cent, and a germination rate of more than 80 per cent.

A limited supply of the seed for cover-cropping is currently available to farmers in soil conservation districts from Soil Conservation Service production.

Foundation seed for seed production purposes can be made available through the S.C.S. or through the California Crop Improvement Association. Farmers interested in obtaining seed should contact either their local Soil Conservation Service officer, or office of the County Farm Advisor.

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J. Earl Coke, Director, California Agricultural Extension Service.

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